

**Notice of Allowability**

Application No.

09/273,217

Examiner

Zachary C Howard

Applicant(s)

HUANG, XIN-YUN

Art Unit

1646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/7/2003.
2. ☒ The allowed claim(s) is/are 1,3,4,6-9,19,20,22 and 24-27.
3. ☒ The drawings filed on 19 March 1999 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

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### EXAMINER'S AMENDMENT

1. The examiner of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Zachary C. Howard, Art Unit 1646, Technology 1600.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Andrew K. Gonsalves and Michael Goldman on February 8, 2005.

The application has been amended as follows:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of identifying an ion channel blocker for an ~~ion~~ a voltage-sensitive potassium, sodium, or calcium channel, said method comprising:

(a) providing a functional ~~ion~~ voltage-sensitive potassium, sodium, or calcium channel having an external vestibule portion, wherein said external vestibule portion is the portion of the ~~ion~~ channel located between an S5 transmembrane and pore forming region of the ~~ion~~ channel or between the pore forming region and an S6 transmembrane of the ~~ion~~ channel, ~~and~~ ;

(b) identifying a compound that binds to the external vestibule portion;  
and

(c) determining whether the compound identified in step (b) inhibits transport through the channel, thereby identifying, as an ion channel blocker for an ion  
the channel, an antibody, binding portion of the antibody, probe, or ligand which inhibits  
ion transport through the ion channel by binding to the external vestibule portion of the  
ion channel.

2. (Canceled)

3. (Currently Amended) The method according to claim 1, wherein  
the ion channel ~~channel~~ blocker is an antibody.

4. (Currently Amended) The method according to claim 3, wherein  
the ion channel is contained in a mammalian cell.

5. (Canceled)

6. (Currently Amended) The method according to claim 3, wherein  
the ion channel is a Kv ion channel.

7. (Original) The method according to claim 6, wherein the antibody is  
a polyclonal antibody.

8. (Currently Amended) The method according to claim 7, wherein  
the ion channel is a Kv1.2, Kv1.3, or Kv3.1 ion channel.

9. (Currently Amended) The method according to claim 8, wherein  
the external vestibule portion has a sequence corresponding to ~~SEQ. ID. NO. 1, SEQ.~~  
~~ID. NO. 3, or SEQ. ID. NO. 4~~ SEQ ID NO:1, SEQ ID NO:3, or SEQ ID NO:4.

10-18 (Canceled)

19. (Currently Amended) A method of screening a drug for effectiveness as an ion channel blocker for ~~an ion~~ a voltage-sensitive potassium, sodium, or calcium channel, said method comprising:

contacting a cell, which cell has a functional ~~ion~~ voltage-sensitive potassium, sodium, or calcium channel having an external vestibule portion, with a drug which is an ion channel blocker candidate, wherein the external vestibule portion is a portion of the ~~ion~~ channel located between an S5 transmembrane and pore forming region of the ~~ion~~ channel or between the pore forming region and an S6 transmembrane of the ~~ion~~ channel;

evaluating the cell to determine if the ion channel blocker candidate binds to the external vestibule portion of the ~~ion~~ channel and inhibits ion transport through the ~~ion~~ channel; and

identifying a drug which binds to the external vestibule portion of the ~~ion~~ channel and inhibits ion transport through the ~~ion~~ channel as an ion channel blocker.

20. (Previously Presented) The method according to claim 19, wherein the ion channel blocker is an antibody, binding portion of the antibody, probe, or ligand.

21. (Canceled)

22. (Currently Amended) The method according to ~~claim 21~~ claim 19, wherein the ~~ion~~ channel is a mammalian ion channel.

23. (Canceled)

24. (Currently Amended) The method according to ~~claim 21~~ claim 19, wherein the ~~ion~~ channel is a Kv ion channel.

25. (Currently Amended) The method according to ~~claim 24~~ claim 20, wherein the antibody is a polyclonal antibody.

26. (Currently Amended) The method according to ~~claim 25~~ claim 19, wherein the ion channel is a Kv1.2, a Kv1.3, or a Kv3.1 ion channel.

27. (Currently Amended) The method according to claim 26, wherein the external vestibule portion has a sequence corresponding to ~~SEQ. ID. NO. 1, SEQ. ID. NO. 3, or SEQ. ID. NO. 4~~ SEQ ID NO:1, SEQ ID NO:3, or SEQ ID NO:4.

28-35 (Canceled)

The specification is amended as follows:

Replace line 15 of page 6 of the specification with the following:

“experiments. Figure 2E shows whole-cell potassium currents from Kv1.2-transfected”

The following is an examiner's statement of reasons for allowance:

Applicants' argument that the structure of calcium, sodium, and potassium ion channels is similar such that the method could be practiced with any of these channels was found persuasive. However, the claims broadly encompassed other channels including those with different structures such as ligand-sensitive ion channels or voltage-sensitive chloride channels. The Examiner's Amendment limits the claims to a method performed with voltage-sensitive calcium, sodium, or potassium channels.

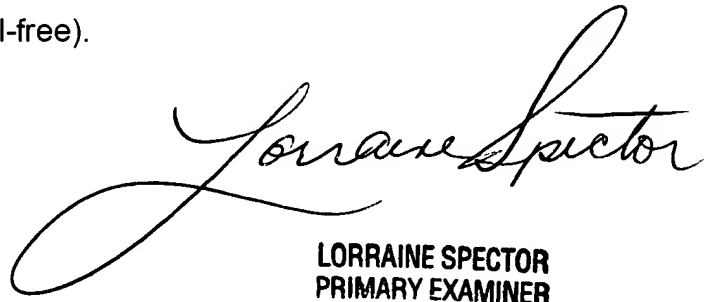
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary C Howard whose telephone number is 571-272-2877. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on 571-272-0829. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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LORRAINE SPECTOR  
PRIMARY EXAMINER